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Environmental Protection
Agency

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Office Of Water (4602)

EPA

Why Do Wellhead Protection?

Issues and Answers in Protecting Public Drinking Water Supply Systems

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Issues and Answers in Protecting Public Drinking Water Supply Systems

Ground Water Protection Division
Office of Ground Water and Drinking Water
Office of Water
U.S. Environmental Protection Agency

Acknowledgments:

This document was prepared under the direction of Barbara Elkus, Director, Ground Water Protection Division (GWPD), and written and designed by GWPD Project Manager Kevin McCormack.

What is Wellhead Protection?

Wellhead protection may be broadly defined as a program that reduces the threat to the quality of ground water used for drinking water by identifying and managing recharge areas to specific wells or wellfields. Wellhead protection measures may range from simple practices involving basic housekeeping procedures around rural farmsteads, to extensive and comprehensive land use planning and restrictions in major cities, towns, and communities. A Wellhead Protection (WHP) Program protects the quality of public drinking water supplies by means of a phased approach which includes development of the program, submittal to EPA for approval, and implementation of the approved Program.

A Wellhead Protection (WHP) Program protects the quality of public drinking water supplies...

Is There a Legal Requirement for WHP?

Aside from the obvious human health and welfare reasons for protecting ground water through wellhead protection, a legal mandate exists for the development and implementation of WHP Programs. The 1986 Amendments to the Safe Drinking Water Act (SDWA) established the WHP Program. Under SDWA Section 1428, each State must prepare a WHP Program and submit it to EPA for approval. Although the law requires that every WHP Program must contain specific elements, EPA allows States considerable flexibility in tailoring Program details to best suit their individual needs. Accordingly, States then have a legal obligation to develop and implement WHP Programs.

EPA Policy Integrates WHP with State Programs

Protection of public water supply wells through WHP activities is also considered an important component of a Comprehensive State Ground Water Protection Program (CSGWPP). In 1991, EPA established a set of ground water protection principles which recognizes that the primary role for ground water protection should be vested with the States. These principles also call for the development and implementation of CSGWPPs as a focal point for all programs related to ground water protection. Through its efforts to support the development of CSGWPPs, EPA is providing funds to States to undertake necessary WHP activities and programs as a critical component of a CSGWPP.

How Many States Have Approved WHP Programs?

By the end of September, 1994, a total of 35 States and territories had approved WHP Programs. An additional 10 States are expected to submit programs for approval by the end of 1995. EPA's Office of Ground Water and Drinking Water is currently working with 5 other States in developing their programs for submittal and approval. This demonstrates that the process of developing an EPA-approved WHP Program at the State level is expanding. Working with Regional Water Management and EPA Headquarters Staff, these States have successfully developed programs that are custom-designed to meet their individual needs.

Arizona, Alabama, Arkansas, Connecticut, Delaware, Guam, Georgia, Kentucky, Louisiana, Illinois, Maine, Maryland, Massachusetts, Michigan, Mississippi, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Tennessee, Ohio, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, West Virginia, and Wisconsin all have EPA-approved WHP Programs in place. The broad geographic dispersion and the diverse climate, topography, and hydrogeology which were taken into account in designing, developing, and implementing these programs are indicative of the successful application of the basic principles of WHP in satisfying the uniquely local requirements of protecting public drinking water supply systems.


Hawaii
Alaska
Puerto Rico

Issues and Answers on the Wellhead Protection Program

EPA first began efforts to implement the WHP Program on a national level by working directly with States through EPA's ten Regional offices. Seminars, workshops, individual meetings, and training sessions were held throughout the country. In the process, a number of central issues surfaced that illustrate the need for WHP Programs at the State level. Listed below are some of the issues and answers encountered during the process.

CHANGING TRENDS IN EPA'S GROUND WATER PROTECTION POLICY

I S S U E

It's well known that EPA has revised its overall Ground Water Protection policy over the last few years to incorporate WHP as a key principle affecting ground water regulation, but what has EPA specifically done to enhance integration of the WHP Program with other programs at the State level, where responsibility for implementation really lies?

A number of changes in EPA's regulatory program are being implemented or evaluated for adoption, including:

- Under the WHP Program, a State having authority for carrying out federal drinking water regulations can use its EPA-approved WHP Program for contingency planning for public water supplies drawn from ground water reserves in the event of a water service emergency;
- A local WHP Program can contribute to completing a watershed control program as a step in avoiding filtration requirements for public water supply systems;
- WHP is identified as one of the complementary means of achieving levels of total coliform contamination below the established drinking water standards;
- States with potential Superfund (abandoned, uncontrolled hazardous waste) sites may receive additional points for these sites in priority ranking for federal funds if they are in or near WHP areas;

In addition to the above, EPA is considering use of the survey of potential contaminant sources and differential management approaches used in WHP Programs as a possible ranking factor in States' applications to waive certain monitoring requirements for synthetic organic chemicals, which could save localities time and money by conducting one assessment and potentially avoiding monitoring for these chemicals if their wells are adequately protected.

I S S U E

In States where the federal government operates or maintains large facilities or areas of land, how is the subject of compliance with the WHP Program addressed in terms of federal versus State authority?

- Under the SDWA Amendments of 1986, any department or agency of the federal government having jurisdiction over any potential source of contaminants within a wellhead protection area (WHPA) identified by a State WHP Program is subject to, and must comply with, all requirements of the State's Program. This includes the payment of reasonable charges and fees levied in connection with the management or remediation of potential sources of ground water contamination within WHPAs.

I S S U E

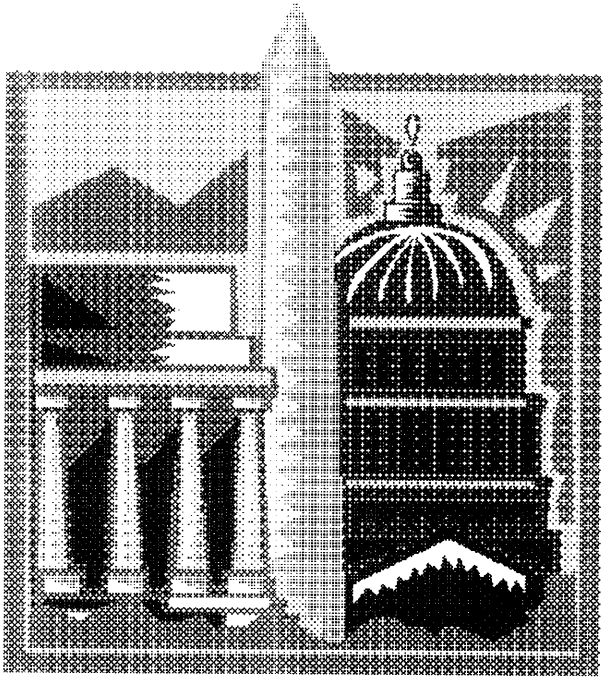
Because comprehensive ground water protection (CGWP) programs are so broad, why do you need a WHP component?

- WHP focuses on limited geographic areas within aquifers which may be managed through a broader scheme;
- Wellhead protection areas (WHPAs) are at high risk because sources or activities within WHPAs may contribute to potential contamination of wells, depending on time of travel (TOT) of contaminants to the well. Differential management of these sources and activities within WHPAs addresses these concerns.
- Wellhead protection areas account for more than 10% of the geographic areas defined in CGWP programs aimed at protecting current and potential sources of ground water used for drinking water.

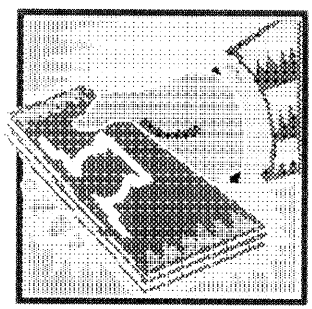
I S S U E

EPA seems to be the only federal agency offering any incentives to State and local participation in the WHP Program. Are any other agencies interested enough in WHP to assist the States and locals in actively participating in the program?

- One agency is taking a major role: the US Department of Agriculture, under the 1990 Farm Bill, provides assistance to farmers and ranchers in adopting practices to reduce risks to ground water from agricultural chemicals or livestock production activities that might pose a threat to public drinking water supplies. Under the Farm Bill, USDA plans to encourage participation in WHP Programs as part of this assistance.



- The USDA also plans to target farmers in WHP areas for participation in the Conservation Reserve Program (CRP). Under the CRP, farmers are asked to remove land from production for the control of soil erosion and off-site pollution. In exchange for discontinuing agricultural production, producers receive an annual rental payment from the federal government. Some States have "sweetened" the federal payment to encourage greater participation in the CRP in sensitive areas, such as WHP areas.



- In addition to the CRP, USDA is also implementing a new program that provides incentive payments and cost share payments to farmers to implement farm-level water quality protection plans. Producers participating in the program also receive technical assistance for implementing water quality protection practices; this program is targeted to WHP areas.

GROUND WATER PROTECTION

I S S U E

Doesn't the soil's natural filtration capacity eliminate all but the most persistent organic contaminants from reaching ground water?

■ Not really; for many years, it was believed that public water supply systems which relied on ground water for drinking water supplies enjoyed a type of built-in "immunity" from contamination, because it was thought that multiple layers of soil, sand and rock acted as filters, trapping contaminants before they reached ground water reserves used for drinking water. Within the past 20 years, however, reported cases of ground water related disease outbreaks and associated illnesses have risen dramatically, and contamination plumes have been detected in areas and soil types not expected to be conducive to transport of ground water pollutants, based on past hydrogeologic assumptions.

I S S U E

If our community relies on deep aquifers with the "natural protection" of confining layers, might we also need WHP?

■ Layers previously thought to be highly confining may contain natural (e.g. fractures) or manmade (e.g., boreholes), which are highly transmissive pathways that permit the introduction of contaminants into the underlying aquifer. Such a phenomenon may be the cause of contamination recently found in aquifers in New York (Long Island), New Jersey, Louisiana, Hawaii, California, and Nebraska. A WHP Program is needed to assess the actual "protectiveness" of these confining layers, and to prioritize attention to sources of contamination located near these openings.

PUBLIC HEALTH PROTECTION

ISSUE

Municipalities usually do a good job of monitoring potential ground water threats to their drinking water supplies, and most of these have worked well over time. Aren't these efforts sufficient to protect the public health?

■ In many cases, they are not. For example, despite the existence of an aquifer protection boundary and an underground storage tank (UST) overlay district in place since 1984, the town of Oak Bluffs, on Martha's Vineyard, MA, discovered a previously unknown and abandoned UST leaking petroleum fuel less than 500 feet from a wellfield containing five public water supply wells in 1986. This case of undetected prior UST location and condition could have been prevented by a thorough contaminant source inventory as part of a WHP Program, followed by appropriate removal activities.

- In a survey conducted by EPAto estimate the occurrence of volatile organic compounds (VOCs) in drinking water, analysis of finished water samples from 945 suppliers using ground water as a drinking water source showed that over 10% of the sources sampled showed levels of VOC contamination. The results of this survey are especially significant because the States participating in the survey were encouraged to choose water supplies for the nonrandom samples for which no prior VOC data were available. These samples were known to have a higher than normal probability of contamination by VOCs, based on the State agency's knowledge of local conditions (e.g., proximity to landfills, industrial and agricultural activity, etc.). Thus, the State agency's prediction that VOC contamination could occur from these sources was confirmed, even though no prior VOC data were available.

- Public Drinking Water Systems monitored for compliance with Maximum Contaminant Levels established by EPA's Office of Ground Water and Drinking Water for chemical and bacterial contamination showed that contamination above these limits occurs on a widespread scale in Public Water Supply Systems. In 1992, of the 47,898 active community ground water systems reporting, 4,179 had 1 or more MCL violation(s). In 1993, out of 46,880 reporting, 4,435 had 1 or more violation(s).

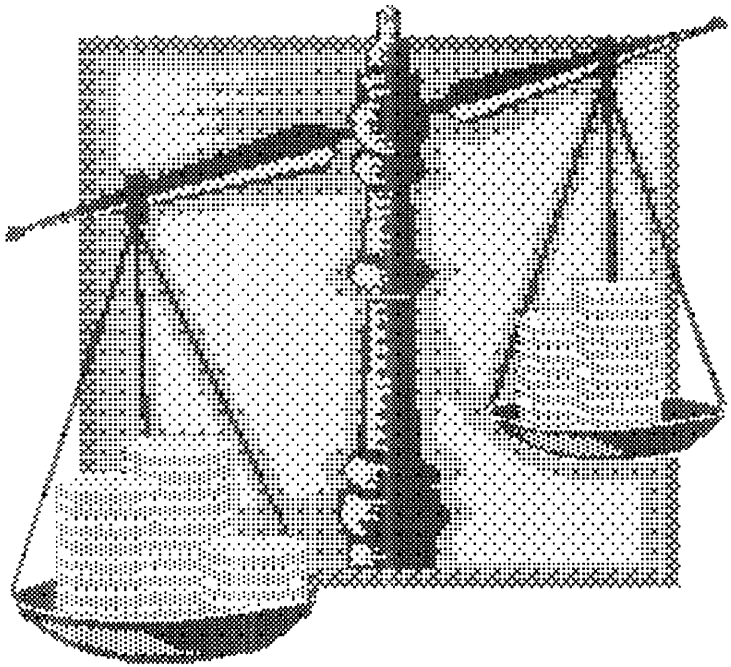
- States reported in 1991 that 14,000 drinking water wells were either closed or restricted, an 87% increase since 1987.

COST OF PREVENTION VERSUS COST OF REMEDIATION

I S S U E

The cost of cleanup in ground water contamination incidents is usually high, but the routine cost of preventive measures often overburdens a municipality in terms of capital outlay. Are these "fail-safe" measures really justified?

- In late 1977, gasoline leaking from a USTin Truro, MA, on Cape Cod, forced the immediate closure of nearby Provincetown's South Hollow Wellfield to prevent contamination of the town's drinking water supply. Emergency aboveground water pipes were installed and an on-site treatment plant was constructed. The aquifer rehabilitation program initally was funded by $1.9 million in State grants, with Provincetown spending over $1 million in direct expenses and borrowed funds in the undertaking. Now, over 16 years and $4 million later, State and local officials are in the last stages of testing to determine whether continued treatment is still necessary. Even if treatment is no longer necessary, daily monitoring may be required



following the completion of the aquifer rehabilitation program. The "Truro Spill" as it has come to be known, has focused attention on the regulatory, institutional, and educational programs needed to ensure the lasting usefulness of the aquifer in the face of intensified growth pressures and land-use activities, and the need to monitor threats which may originate outside one town's jurisdiction but threaten another's drinking water supply. In this instance, financial commitment and cooperation between local jurisdictions in developing Wellhead Protection Programs for protection of adjacent ground water reserves used for drinking water would have been time and money well spent when compared with the clean-up costs.

I S S U E

In cases of documented contamination, can't affected users simply have new wells installed or be hooked-up to existing suppliers?

- In contamination cases where the only feasible alternative is drilling new wells, installing new distribution systems, or connecting users to existing PWSSs, the cost is substantial. Records of Decision (RODs) for cleanup of 40 Superfund Sites where public water supplies were affected showed that in cases where these alternatives were necessary, costs ranged from $70 thousand to over $2.3 million, depending on extent of contamination and population served. In addition, given the current hydrogeologic studies necessary, the cost of installing, developing, and connecting to service a new PWSS well now represents one of the most costly line-item expenses of any municipality.

I S S U E

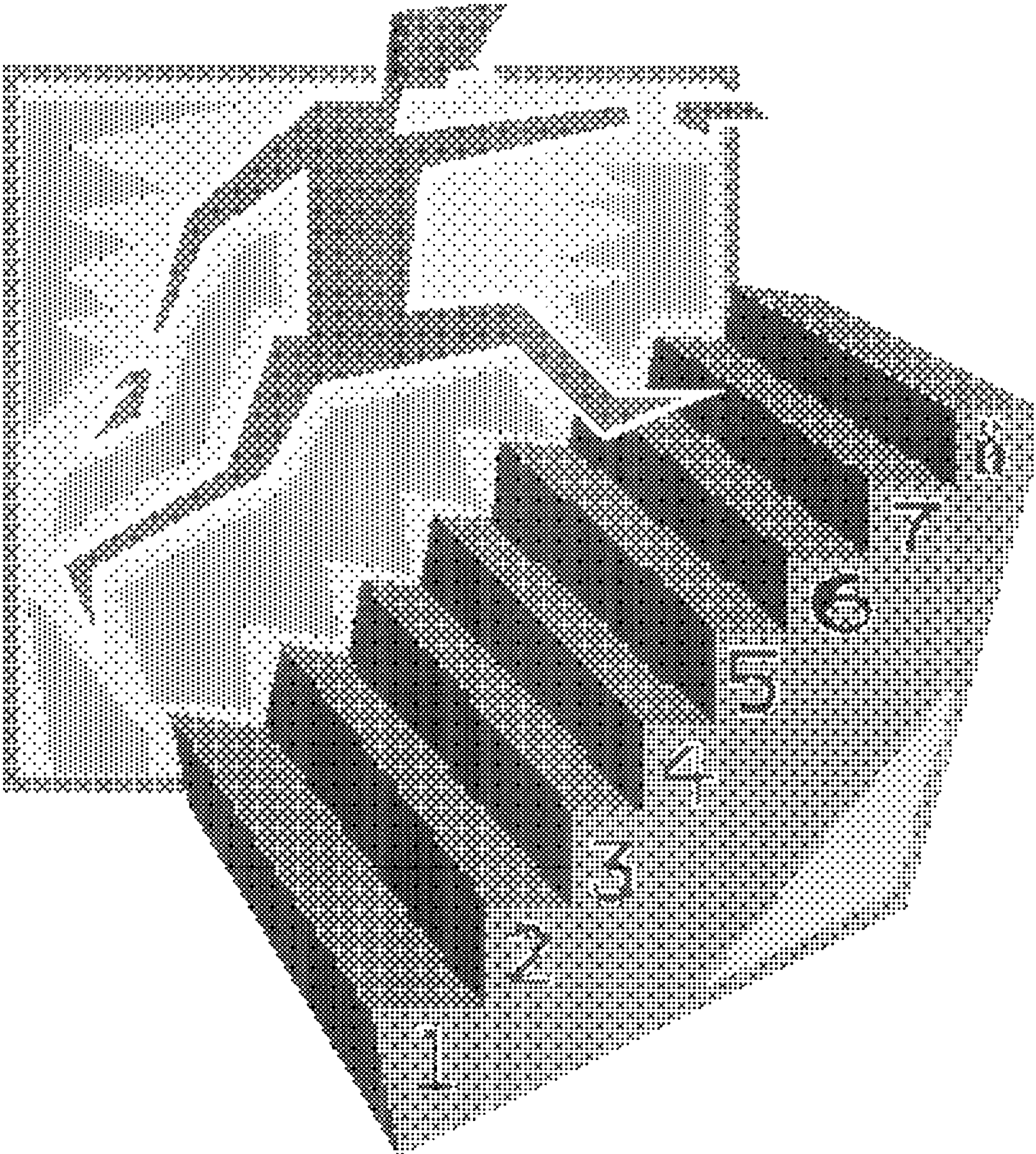
What advantages does WHP have over the normal exercise of State and local funding initiatives for protection of PWSSs?

- WHP provides a structured, organized means of focusing federal, State, and local government resources, which are usually limited, on areas of greatest concern in providing for public drinking water supplies. An effective WHP Program clearly sets forth the real purpose of the Program, helps identify gaps in management roles and duties of participating agencies, provides technical assistance in delineating wellhead protection areas, suggests differential management strategies for dealing with contaminant sources, provides guidance in inventorying contaminant sources within these areas, helps develop contingency planning for water supply contamination or disruption, assists in the decision making process for siting new public water supply wells, and offers comprehensive opportunities for public participation in the development and implementation of wellhead protection programs at the State and local level.

I S S U E

If a WHP Program is put into place, where will the "teeth" in the implementation phase come from? Won't those persons not interested in WHP just ignore it?

- Effective implementation of a WHP Program under these elements can be greatly facilitated by exercising existing municipal authorities, such as inspections, permitting, enforcement, zoning, and land use restrictions. By exercising these authorities and controls at the local level, a community serves notice that WHP is a "real" program that makes good common sense, and that persons responsible for sources or activities within WHPAs which may be potential threats to ground water based drinking water supplies may be held accountable in managing these sources and activities effectively. WHP can benefit the municipality on a broad scale in terms of safeguarding the public health as well as ensuring economic viability for the community on a long-term basis through a preventive approach to protecting public drinking water supplies.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I S S U E

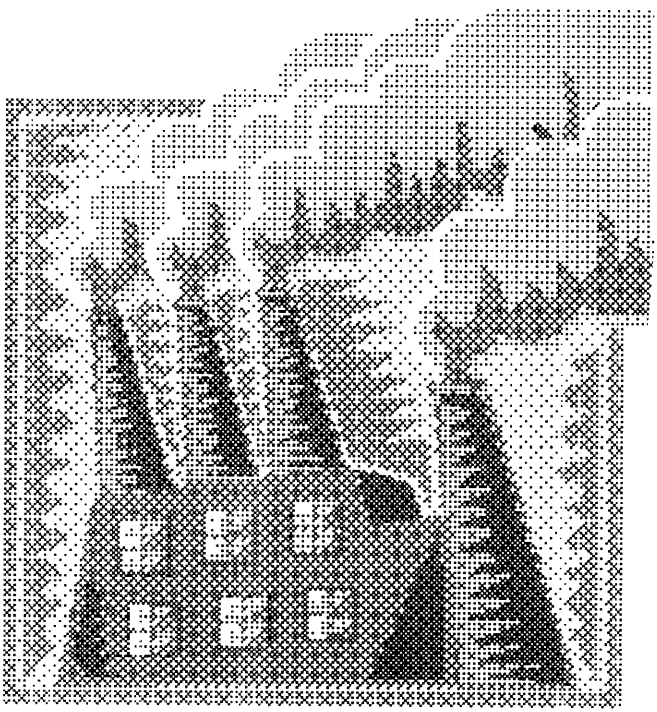
Do any indicators exist that show that the essential elements of a WHP Program are being used to prevent contamination of our ground water-based public drinking water supplies at the local level?

- Yes - there is currently a trend in the direction of new light industrial and residential development towards protecting ground water from pollution. Protection of public drinking water supplies is becoming an issue at the mayoral and county supervisor level. Current trends in area "Master Plans" for projected municipal growth continue to show incorporation of the basic concepts of wellhead protection in plans designed to safeguard public drinking water supplies. For example, signs announcing entry into wellhead, ground water, and drinking water protection areas are being erected along local roads and interstate highways. Highway materials (salt and other inorganics) are being relocated away from wells and wellfields. In the long term, these planning and management decisions actually help attract business and industry to these areas, creating more jobs and an expanding tax base.

I S S U E

What action can industry take to embrace pollution prevention techniques to protect public drinking water supplies?

- Process modification, waste minimization, monitoring and recycling are encouraged under WHP Programs as part of EPA's "Common Sense Initiative." This industry-by-industry approach introduces a new policy of protecting human health and the environment by



setting tough goals for industry, while at the same time encouraging flexibility and innovation in how these goals are met. The "Common Sense Initiative" encourages the development of new or modified manufacturing or operating strategies for industries that want to locate, or to continue operating in, WHPAs.

AVOIDING THE HIGH COST OF REGULATION

I S S U E

What advantages can the WHP Program really offer the PWSS operator and the consumer?

- PWSS rates are more frequently being affected by increasingly stringent drinking water monitoring requirements under the Safe Drinking Water Act. Compliance with these requirements costs the PWSS operator money, which is ultimately passed on to the consumer in higher water rates. Participation in WHP Program can help the PWSS operator reduce the cost and frequency of monitoring.

I S S U E

Usually, documented cases of drinking water supply contamination are cleaned up to predetermined federal or State levels before service is restored to the consumer. Why would WHP make any difference in the ultimate price tag?

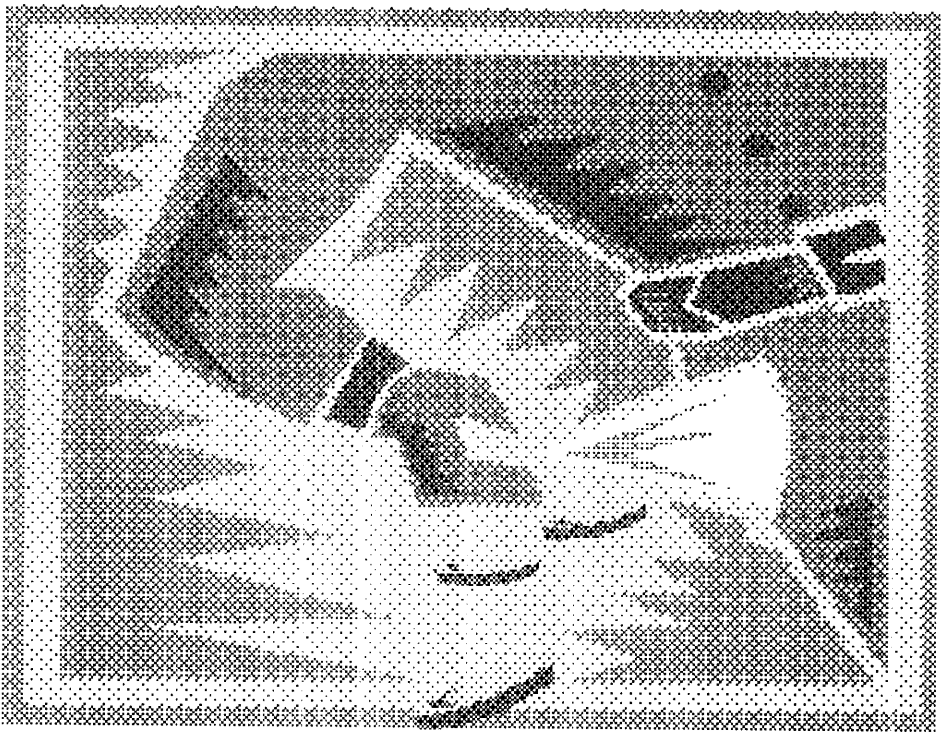
- Regulatory authorities implemented under RCRA and Superfund to clean up ground water contamination and render public drinking water supplies usable afterwards characteristically carry a high price tag in terms of unit cost increases to PWSS users. A review of RODs for 50 Superfund sites threatening public water supply systems concluded that the average costs of cleaning up ground water are $5.9 million to $7.3 million per site. The National Research Council estimated that $1 trillion will be spent over the next 30 years to clean up ground waters at contaminated sites. The preventive aspects of WHP are designed to preclude the need for such costly remediation measures, saving the users money in the long run.

INDUSTRIAL DEVELOPMENT

I S S U E

Aside from catastrophic pollution incidents such as New York's Love Canal and Times Beach, Missouri, what real effect does "normal" industrial pollution, generated as a result of routine industrial procedures, have on the nation?

- Ground water contamination resulting from industrial pollution is a real and present threat to the economic viability of States and individual communities. In the State of Minnesota alone, a survey of 21 cities and 18 companies yielded a **conservative** estimate of the true dollar value of this reality: a total of $24,045,500 spent in 17 cities, and $43,026,500 expended by 18



I S S U E

Can't the remedial costs of these periodic incidents be handled as they always have in the past; combined State, federal, and municipal assistance?

companies in coping with ground water contamination.

■ They can, but the dollar cost of the cleanup and remediation is only the tip of the iceberg. The increasing liability and high costs associated with ground water cleanup and remediation stresses municipal resources to the point of effecting changes in the pattern of business development within the State or municipality. The costs and problems associated with ground water contamination diminishes the attraction of these localities for redevelopment and reuse by outside interests, and encourages businesses to abandon such sites. Relocation to another city or State means a long-term loss to the area in terms of jobs and tax base.

How Can I Find Out More About WHP?

The U.S. Environmental Protection Agency's Office of Ground Water and Drinking Water in Washington, DC, and all ten of EPA's Regional offices (listed below) provide technical assistance in the development and implementation of State WHP Programs.

For More Information Contact:

Ms. Jane Downing
Ground Water Management Sec.
Water Management Division
U.S. EPA, Region I
JFK Federal Building (WGT-445)
Boston, MA 02203
617-565-3600

Ms. Dore LaPosta
Ground Water Management Sec.
Water Management Division
U.S. EPA, Region II
26 Federal Plaza, Room 842
New York, NY 10278
212-264-5635

Ms. Virginia Thompson
Office of Ground Water
Water Management Division
U.S. EPA, Region III
841 Chestnut Street
Philadelphia, PA 19107
215-597-2786

Ms. Mary Kay Lynch
Ground Water Protection Branch
Water Management Division
U.S. EPA, Region IV
345 Courtland Street, NE
Atlanta, GA 30365
404-347-3379

Ms. Jerri-Anne Garl
Ground Water Protection Branch
Water Division
U.S. EPA, Region V
230 S. Dearborn St. (5WG-TUB8)
Chicago, IL 60604
312-353-1441

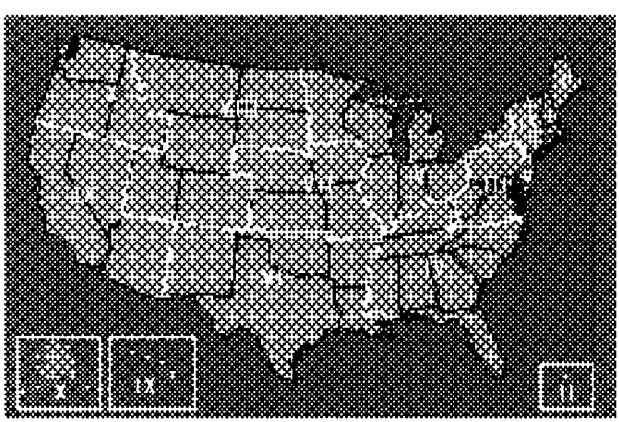
Ms. Erlece Allen
Office of Ground Water
Water Management Division
U.S. EPA, Region VI
1445 Ross Avenue (6-W)
Dallas, TX 75202-2733
214-655-6446

Mr. Robert Fenemore
Office of Ground Water Prot.
Water Management Division
U.S. EPA, Region VII
726 Minnesota Avenue
Kansas City, KS 66101
913-551-7745

Ms. Patricia H. Denham
Ground Water Branch
Water Management Division
U.S. EPA Region VIII
999 18th Street (8WMGW)
Denver, CO 80202-2405
303-294-1164

Ms. Doris Betuel
Source Water Protection Sec.
Water Management Division
U.S. EPA, Region IX
75 Hawthorne Street (W-6-3)
San Francisco, CA 94015
415-744-1835

Mr. Roger Mochnik
Office of Ground Water
Water Management Division
U.S. EPA, Region X
1200 Sixth Avenue (WD-139)
Seattle, WA 98101
206-553-1216



Appendix: State and Territory Wellhead Protection Agencies

Alabama

AL Department of Environmental Management
1751 Congressman W.L. Dickinson Drive
Montgomery, AL 36130

Alaska

AK Department of Environmental Conservation
P.O. Box O
Juneau, AK 99811-1800

Arizona

AZ Department of Environmental Quality
Groundwater Monitor Unit
2005 North Central, Room 202-A
Phoenix, AZ 85007

Arkansas

AR Department of Health
4815 West Markham
Little Rock, AR 72201

California

Ground Water Unit
CA State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 95814

Colorado

Water Quality Control Division
CO Department of Health
4210 East 11th Avenue
Denver, CO 80220-3716

Connecticut

Bureau of Water Management
CT Department of Environmental Protection
Room 117, State Office Building
165 Capital Avenue
Hartford, CT 06106

Delaware

Division of Water Resources
Ground-Water Management Section
DE Department of Natural Resources and
Environmental Contamination
P.O. Box 1401
Dover, DE 19903

Florida

FL Department of Environmental Regulations
Bureau of Drinking Water and
Ground-Water Research
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Georgia

GA Geologic Survey, EP
Department of Natural Resources
Room 400, 19 M.L. King, Jr. Drive, S.W.
Atlanta, GA 30334

Hawaii

Groundwater Protection Program
HI Department of Health
5 Waterfront, Suite 250
500 Alamoana Boulevard
Honolulu, HI 96813

Idaho

Water Quality Bureau
ID Division of Environmental Quality Statehouse
ID Department of Health and Welfare
450 West State Street
Boise, ID 83720

Illinois

IL EPA
2200 Churchill Road
Springfield, IL 62706

Indiana

Drinking Water Branch Chief
IN Department of Environmental Management
105 S. Meridian/P.O. Box 6015
Indianapolis, IN 46206-6015

Iowa

IA Department of Natural Resources
Henry Wallace Office Building
900 East Grand
Des Moines, IA 50319

Kansas

KS Department Health and Environment
Landon State Office Building, 9th Floor
900 S.W. Jackson
Topeka, KS 66612-1290

Kentucky

Department of Environmental Protection
Division of Water
Ground Water Branch
18 Reilly Road
Frankfort, KY 40601

Louisiana

Department of Environmental Quality
P.O. Box 44066
Baton Rouge, LA 70804

Maine

Drinking Water Program
Division of Health Engineering
ME Department of Human Services
State House Station 10
Augusta, ME 04333

Maryland

Water Supply Program
MD Department of the Environment
2500 Broening Highway
Baltimore, MD 21224

Massachusetts

Division of Water Supply
Department of Environmental Quality Engineering
1 Winter Street
Boston, MA 02108

Michigan

MI Department of Public Health
P.O. Box 30035
Lansing, MI 48909

MI Department of Natural Resources
Stevens T. Mason Building
P.O. Box 30028
Lansing, MI 48909

Minnesota

MN Department of Health
P.O. Box 59040
Minneapolis, MN 55459

Missouri

Public Drinking Water Program
MO Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Mississippi

Ground-Water Quality Branch
MS Bureau of Pollution Control
P.O. Box 10385
Jackson, MS 39289-0385

Montana

Water Quality Bureau
MT Department of Health and Environmental Sciences
Cogswell Building, Room A206
Helena, MT 59620

Nebraska

NE Department of Environmental Control
Statehouse Station
P.O. Box 98922
Lincoln, NE 68509-8922

Nevada

Ground-Water Protection Program
NV Division of Environmental Protection
123 West Nye Lane
Carson City, NV 89710

Appendix: State and Territory Wellhead Protection Agencies (continued)

New York

NY Department of Environmental Conservation
Division of Water, Room 306
50 Wolf Road
Albany, NY 12233-0001

New Jersey

Bureau of Water Supply, Planning and Policy
NJ Department of Environmental Protection
CN029
Trenton, NJ 08625-0029

New Hampshire

Ground-Water Protection Bureau
NH Department of Environmental Services
P.O. Box 95
Concord, NH 03301

New Mexico

NM Health and Environment Department
1190 St. Francis Drive
Santa Fe, NM 87503

North Carolina

Ground-Water Section
NC Department of Environmental Health and Natural Resources
P.O. Box 27687
Raleigh, NC 27611

North Dakota

Environmental Health Section
ND Department of Health
P.O. Box 5520
Bismarck, ND 58502-5520

Ohio

Division of Ground Water
OH EPA
1800 Water Mark Drive/Box 1049
Columbus, OH 43266-0149

Oklahoma

Pollution Control Coordination Board
OK Department of Pollution Control
P.O. Box 53504
Oklahoma City, OK 73152

Oregon

Water Quality Division
OR Department of Environmental Quality
811 S.W. Sixth Avenue
Portland, OR 97204-1334

Pennsylvania

Division of Water Supplies Bureau of Community Environmental Control
PA Department of Environmental Resources
P.O. Box 2357
Harrisburg, PA 17105-2357

Rhode Island

RI Department of Environmental Management
291 Promenade Street
Providence, RI 02908-5767

South Carolina

Bureau of Water
Supply and Special Programs Department of SC
Natural Resources and Community Development
2600 Bull Street
Columbia, SC 29201

South Dakota

Division of Environmental Regulation
SD Department of Water and Natural Resources
Joe Foss Building
523 E. Capitol
Pierre, SD 57501

Tennessee

TN Department of Health and Environment
Division of Water Supply
150 Ninth Avenue, North
Nashville, TN 37219-5404

Texas

TX Department of Health
1100 West 49th Street
Austin, TX 78756

TX Water Commission
P.O. Box 13087, Capitol Station
Austin, TX 78711-3087

Utah

Burea of Drinking Water and Sanitation
UT Department of Health
288 North 1460 West
Salt Lake City, UT 84116-0690

Vermont

Division of Environmental Health Water
Supply Program
VT Department of Health
60 Main Street
Burlington, VT 05401

Virginia

Ground Water Program Manager
VA Water Control Board
P.O. Box 11143
Richmond, VA 23230-1143

Washington

LD-11
WA Department of Health
Olympia, WA 98504

West Virginia

Environmental Engineering Division
WV Office of Environmental Health Services
Capital Comp. Building 3, Room 550
1900 Kanawha Boulevard, East
Charleston, WV 25305

Wisconsin

Division of Environmental Standards
WI Department of Natural Resources
P.O. Box 7921
Madison, WI 53707

Wyoming

WY DEQ – Water Quality Division
Herschler Building, 4th Floor
122 West 25th
Cheyenne, WY 82002

American Samoa

American Samoa EPA
Office of the Governor
Pago Pago, American Samoa 96799

Guam

Guam EPA
Government of Guam
Harmon Plaza Complex Unit D107
130 Rojas Street
Harmon, Guam 96911

Mariana Islands

Commonwealth of Northern Mariana Islands
Division of Environmental Quality
P.O. Box 1304
Saipan, Mariana Islands 96950

Palau

Palau Environmental Quality Protection Board
P.O. Box 100
Koror, Palau 96940

Puerto Rico

Water Quality Area
PR Environmental Quality Board
Box 11488
Santurce, PR 00910

Virgin Islands

VI Department of Planning and Natural Resources
179 Altona and Welgunst
St. Thomas, VI 00820